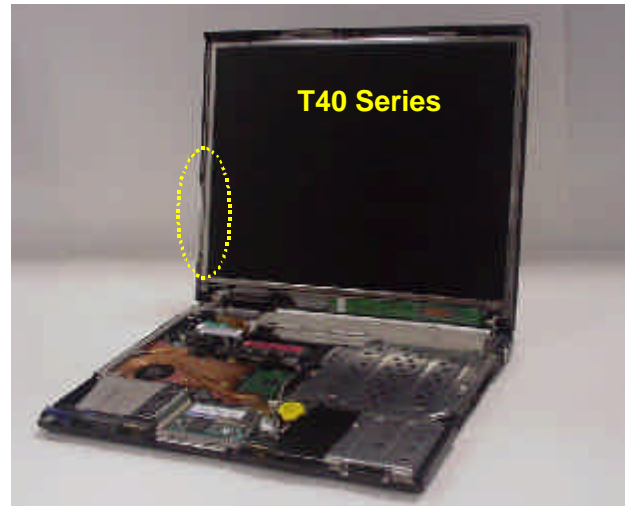


## RF Exposure Evaluation

The built\_in antenna connected to the applying modular transmitter is located at the left hinge portion of keyboard for the host IBM ThinkPad X30 Series, or the left LCD section for the host IBM ThinkPad T40 Series as shown the photos below.



The closest antenna separation from person's body (lap) is approximately 2.5 cm in case of X30 Bluetooth antenna. Therefore the applying transmitter device with the subjected antenna systems is categorized as a portable device by FCC CFR 47 section 2.1093.

The footnote 14 of the Section 3 in Supplement C of OET Bulletin 65 guides <sup>14</sup> ..... If a device, its antenna or other radiating structures are operating at closer than 2.5 cm from a person's body or in contact with the body, SAR evaluation may be necessary when the output is more than 50–100 mW, depending on the device operating configurations and exposure conditions.”

The conducted output power of the applying Bluetooth transmitter measured on ThinkPad X30 Series is 2.58mW (4.11dBm) and the peak antenna gain is 1.80 dBi. And the both measurement values for T40 Series are lower than the ones of X30 Series.

Therefore the conducted and radiated powers emitted from the applying LMA transmitter are far below 50mW, so it satisfies the RF exposure evaluation regarding CFR 47 Part 15.247(b)(4) without a SAR compliance test report.

Note) As described in the outline of submission, the LMA transmitter module collocates with one of three kinds of specified dominant WLAN transmitters. The RF safety evaluation with the collocated transmitters is submitted for each application of the dominant transmitters. The grant condition of the possible Tx collocation is introduced to customers with the IBM Web site shown in the next page.

## IBM Web site for user's guidance concerning the co-located transmitters

Note) The contents will be available after the product announcement.

<http://www.pc.ibm.com/qtechinfo/MIGR-44156.html>

The screenshot shows the IBM PC support website. The top navigation bar includes links for Home, Products & services, Support & downloads, and My account. A search bar is located on the right. The left sidebar contains links for Select a language, PC support home, Warranty lookup, and Related links. The main content area is titled "TP Wireless Systems – Additional RF Option devices receive FCC certification". Below this, there is a section for "Applicable countries/regions" with a link to the United States. A "Service hints & tips" section follows, with a link to "Affected configurations". The main content then states "Additional RF Option devices receive FCC certification for use on:" and presents a table of pre-installed models. The table lists three models: ThinkPad R40 Series, ThinkPad T40 Series, and ThinkPad X30 Series, each with its FCC ID and a table of PC options allowed multiple transmission. Below the table, there is a link to "Other wireless pre-installed type or wireless upgradable models" and a red arrow pointing to "Link to the next page." A note states "NG: Not recognized by BIOS, nor not authorized to use." followed by three items: #1: FCC ID: ANO20020100MTN, #2: FCC ID: PI4BT-ULTRA, and #3: FCC ID: PI4BT-IBM-PCI. Each item has a corresponding link to the product page. A "Solution" section follows, stating that the supplementary document of ThinkPad's "Service and Troubleshooting Guide" has the following information in "Wireless regulatory information – USA Federal Communications Commission (FCC)" section: Please make sure of the following when you use a Bluetooth option or wireless option PC Card in your ThinkPad computer. The list includes: 1. Visit the IBM site at www.ibm.com/pc/qtechinfo/MIGR-44156.html and confirm the updated list of RF option devices that have been approved to cooperate with the integrated wireless feature. 2. When you use any other RF option device that is not listed on the IBM site, all other wireless features including the integrated transmitter in your ThinkPad computer are required to be turned off. 3. Users are requested to follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual. The footer contains links for About IBM, Privacy, Legal, and Contact, along with document ID, last modified date, and copyright information.

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**TP Wireless Systems – Additional RF Option devices receive FCC certification**

**Applicable countries/regions**

United States

**Service hints & tips**

**Affected configurations**

Additional RF Option devices receive FCC certification for use on:

Pre-installed Models of IBM Dual-Band 11a/b Wi-Fi Wireless Mini PCI Adapter	FCC IDs	PC options allowed multiple transmission		
		#1	#2	#3
ThinkPad R40 Series wireless models	ANO20020300D3L	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ThinkPad T40 Series wireless models	ANO20020302R1L	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ThinkPad X30 Series wireless models (X31)	ANO20020304T2L	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Other wireless pre-installed type or wireless upgradable models](#) → **Link to the next page.**

**NG:** Not recognized by BIOS, nor not authorized to use.

#1: FCC ID: ANO20020100MTN [IBM Integrated Bluetooth with 56K Modem](#)

#2: FCC ID: PI4BT-ULTRA [Bluetooth UltraPort Module from IBM](#)

#3: FCC ID: PI4BT-IBM-PCI [Bluetooth PC Card II](#)

**Solution**

The supplementary document of ThinkPad's "Service and Troubleshooting Guide" has the following information in "Wireless regulatory information – USA Federal Communications Commission (FCC)" section:


Please make sure of the following when you use a Bluetooth option or wireless option PC Card in your ThinkPad computer:

1. Visit the IBM site at [www.ibm.com/pc/qtechinfo/MIGR-44156.html](http://www.ibm.com/pc/qtechinfo/MIGR-44156.html) and confirm the updated list of RF option devices that have been approved to cooperate with the integrated wireless feature.
2. When you use any other RF option device that is not listed on the IBM site, all other wireless features including the integrated transmitter in your ThinkPad computer are required to be turned off.
3. Users are requested to follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

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**TP Wireless Systems – Approved wireless Mini PCI Options and Additional RF option devices receive FCC certification**  
**Applicable countries/regions**  
 United States  
**Service hints & tips**  
**Affected configurations**  
**BIOS group 1**

LMA (Limited Modular Approval) adapters	FCC IDs	Approved ThinkPad models	PC options allowed multiple transmission		
			#1	#2	#3
IBM High Rate Wireless LAN Mini PCI Adapter	ANOM3AWEB56GA	R32 Series T30 Series X30 Series(X30)	NG	O	O
Cisco Aironet Wireless 802.11b	ANOU58H004				

**BIOS group 2**

LMA (Limited Modular Approval) adapters	FCC IDs	Approved ThinkPad models	PC options allowed multiple transmission		
			#1	#2	#3
Cisco Aironet Wireless 802.11b	ANOU58H004	R40 Series T40 Series X30 Series(X31)	O	O	O
Intel PRO/Wireless LAN 2100 3B Mini PCI Adapter	ANO20020201CLK				
IBM High Rate Wireless LAN Mini PCI Adapter III	ANO20020200BRX	R40 Series			

**NG:** Not authorized to use by the FCC rule, nor recognized by BIOS.

#1: FCC ID: ANO20020100MTN      [IBM Integrated Bluetooth with 56K Modem](#)  
 #2: FCC ID: P14BT-ULTRA      [Bluetooth UltraPort Module from IBM](#)  
 #3: FCC ID: P14BT-IBM-PCI      [Bluetooth PC Card II](#)

**Solution**  
 The supplementary document of ThinkPad's "Service and Troubleshooting Guide" has the following information in "Wireless regulatory information – USA Federal Communications Commission (FCC)" section:

**Use of wireless options**  
 Please make sure of the following conditions on use of wireless features.

1. Visit the IBM site at [www.ibm.com/pc/qtechinfo/MIGR-43693.html](http://www.ibm.com/pc/qtechinfo/MIGR-43693.html) and confirm the updated list of RF option devices that have been approved to cooperate with the integrated wireless feature.
2. When you use any other RF option device that is not listed on the IBM site, all other wireless features including the integrated transmitter in your ThinkPad computer are required to be turned off.
3. Users are requested to follow the RF Safety instructions on wireless option devices that are included in the RF option device's user's manual.

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